

REMARKS

The Office Action dated September 5, 2006 has been received and carefully noted. Claims 1-3 were examined. The specification was objected to by the Examiner because the title was not descriptive. Claims 1-3 were rejected under 35 U.S.C. § 103(a) while claim 3 was also rejected under 35 U.S.C. § 112.

The title has been amended to be more descriptive. Claim 3 is amended and entry is requested. Support for amended claim can be found in the specification at page 7, lines 8 - 11. As such, no new matter has been added. Claims 1-3 remain pending in the application.

Reconsideration of the pending claims is respectfully requested in view of the claim amendment and the following remarks.

I. Specification

The Examiner objected to the title as being non descriptive. Applicants have amended the title as suggested by the Examiner. The new title “Burst mode optical receiver for maintaining constant signal amplitude” is clearly indicative of the invention to which the claims are directed.

As such, approval of this amendment is respectfully requested.

II. Claims Rejected Under 35 U.S.C. § 112

Claim 3 is rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regard as the invention. The Examiner states that the claim recites the limitation “said first or second impedances” in line 3 but that limitation has insufficient antecedent basis. *See page 2 of the Office Action.* Applicants have amended claim 3 to better clarify that an impedance of the pre-amplifier is controlled by the impedance control unit in response to the control signal. This amendment is fully supported by the specification at page 7, lines 8-11.

Applicants respectfully submit that claim 3 now particularly points out and distinctly claims the subject matter that Applicants regard as the invention and complies with the enablement requirement. Accordingly, Applicants request withdrawal of rejection of claim 3 under 35 U.S.C. § 112.

III. Claims Rejected Under 35 U.S.C. § 103(a)

Claims 1 and 2 are rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent No. 4,565,974 issued to Smoot (hereinafter "*Smoot*") in view of US Patent No. 5,475,342 issued to Nakamura et al. (hereinafter "*Nakamura et al.*"). To establish a *prima facie* case of obviousness: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference; (2) there must be a reasonable expectation of success; and (3) the references when combined must teach or suggest all of the claim limitations. *MPEP* § 2142. Applicants respectfully submit that a *prima facie* case of obviousness has not been established.

The invention is directed to a burst mode optical receiver capable of accurately detecting an optical signal of small amplitude. In one embodiment, the receiver includes a photodiode, a pre-amplifier, a first peak detector, a gain controller, a first limiting amplifier and a buffer. The pre-amplifier gain is controlled by a control signal which is generated by a gain controller. The gain controller compares the average value of the of the detected top peak voltage and the detected bottom peak voltage of the input waveform with a comparison voltage and outputs the control signal which controls the gain of the pre-amplifier.

On the other hand, in *Smoot*, the gain controller, the FET shunt device 19 is controlled solely by a peak to peak detector 18. (col 3, line 44-48). This gain controller makes no comparison with a comparison voltage to output a control signal to control gain of the pre-amplifier, unlike the claimed invention. Similarly, *Nakamura et al.* discloses an amplifier including an automatic threshold control circuit (ATC) in place of the first peak detector. The ATC circuit detects the top and bottom value of the input waveform and outputs a value between the top and bottom values and is directly connected to the limiting amplifier (Fig. 4). It does not disclose use of any separate gain controller. Thus, there is no comparison to any other comparison voltage before the average value is fed back to the amplifier.

Hence, with respect to independent claim 1, Applicants respectfully submit that neither *Smoot* nor *Nakamura et al.* teach or suggest the limitation "a gain controller, which compares the first reference voltage with a comparison voltage and outputs the control signal which controls a gain of the pre-amplifier according to the comparison result ." Applicants respectfully requests that the Examiner withdraw the outstanding 35 U.S.C. § 103(a) rejection as applied to independent claim 1.

As for claim 2, dependent claim 2 depend from independent claim 1. For the reasons set forth above in regard to independent claim 1, *Smoot* does not teach or suggest all the elements of claims 1. *Nakamura et al.* does not cure these defects of *Smoot*. Applicants are unable to discern and the Examiner does not state any section of *Nakamura et al.* where it is disclosed that the gain of the pre-amplifier is controlled by a gain controller which uses a comparison voltage. Accordingly, Applicants respectfully submit that dependent claim 2 is patentable over *Smoot* in view of *Nakamura et al.*

Claim 3 is rejected under 35 U.S.C. § 103(a) as obvious over *Smoot* in view of *Nakamura et al.* and further in view of US Patent No. 5,602,510 issued to Bayruns et al. (hereinafter "*Bayruns et al.*"). Dependent claims 3 depend from independent claims 1. For the reasons set forth above in regard to independent claims 1, *Smoot* does not teach or suggest all the elements of claims 1. Neither *Nakamura et al.* nor *Bayruns et al.* cures this defect of *Smoot*. Applicants are unable to discern and the Examiner does not state any section of *Nakamura et al.* or of *Bayruns et al.* where it is disclosed that the gain of the pre-amplifier is controlled by a gain controller which uses a comparison voltage. Accordingly, Applicants respectfully submit that dependent claim 3 is patentable over *Smoot* in view of *Nakamura et al.* and in further view of *Bayruns et al.*

Thus, *Smoot* does not include each and every element of independent claims 1. And claims 2 and 3 include all of the limitations of their independent claims 1. Therefore, *Smoot* does not anticipate these claims. Accordingly, Applicants respectfully submit that independent claim 1 and its dependent claims 2 and 3 are patentable over *Smoot* in view of *Nakamura et al.* and in further view of *Bayruns et al.*

CONCLUSION

In view of the remarks made above, it is respectfully submitted that pending claims 1-3 define the subject invention over the prior art of record. Thus, Applicants respectfully submit that all the pending claims are in condition for allowance, and such action is earnestly solicited at the earliest possible date.

Respectfully submitted,

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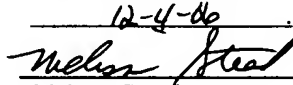

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